

NAME: Pratt & Whitney
I.D. NO: CTD990672081
FILE LOC: R-1B
OTHER: RDMS #2353

**ADDITIONS AND MODIFICATIONS
TO THE SEPTEMBER 5, 1991
RCRA PART B PERMIT APPLICATION**

UNITED TECHNOLOGIES CORPORATION
PRATT & WHITNEY
MANUFACTURING DIVISION
400 MAIN STREET
EAST HARTFORD, CONNECTICUT 06108



CTD 990672081

RDMS DocID 2353

REVISION DATE:
APRIL 27, 1992

PREPARED BY:

LOUREIRO ENGINEERING ASSOCIATES, P.C.
CONSULTING ENGINEERS

LEA
PLAINVILLE, CT

COMM. NO. 68ET212



**UNITED
TECHNOLOGIES
PRATT & WHITNEY**

400 Main Street
East Hartford, Connecticut 06108

April 27, 1992

NAME: Pratt + Whitney
I.D. NO.: CTD990672081
FILE LOC: R-113
OTHER: _____

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APR 27 1992

Ms. Lynn M. Clune
Engineer
Waste Engineering & Enforcement Division
Department of Environmental Protection
165 Capitol Avenue
Hartford, CT 06106

DEP- Waste Management Bureau
Waste Engineering & Enforcement
Permits

Ref: RCRA Part B Application submittal for Pratt & Whitney East
Hartford CTD990672081

Dear Ms. Clune:

Enclosed is a submittal of recent revisions to the RCRA Part B Application for the Pratt & Whitney facility located at 400 Main Street, East Hartford, Connecticut. This submittal includes revisions to the Contingency Plan in Volume II-Section F, Personnel Training in Volume II-Section G, and Closure Plan and Financial Requirements in Volume III-Section H.

Thank you very much for your cooperation. If you have any questions concerning this submittal, please call Paul Guilmette at 557-0900.

Sincerely,

R.C. Weiss
Director, Facilities & Services

RCW/PGG

cc: John Podgurski, USEPA
Timothy R.E. Keeney, Commissioner-Connecticut DEP
Richard J. Barlow, Chief-Bureau of Waste Management
David A. Nash, Director-Waste Engineering and Enforcement
George Dews, Waste Engineering and Enforcement

**INSTRUCTIONS FOR INCORPORATING
ADDITIONS AND MODIFICATIONS
TO THE SEPTEMBER 5, 1991
RCRA PART B PERMIT APPLICATION
FOR**

*United Technologies Corporation
Pratt & Whitney
400 Main Street
East Hartford, CT
EPA ID. No. CTD990672081*

REVISION DATE: April 27, 1992

ITEM	REMOVE PAGES	REPLACE PAGES
<i>VOLUME II-SECTION F</i>	94	94
	CONT. PLAN, A-4	CONT. PLAN, A-4
	APPENDIX A, A-2	APPENDIX A, A-2
<i>VOLUME II-SECTION G</i>	97 THROUGH 107	97 THROUGH 107
	APPENDIX G-1, JOB DESCRIPTIONS	NONE
<i>VOLUME III-SECTION H</i>	108 THROUGH 110	108 THROUGH 110
	147 & APPENDIX H-4	147 & APPENDIX H-4

SECTION F - CONTINGENCY PLAN

The Contingency Plan for the East Hartford Facility is presented here as Exhibit F - 1. This Contingency Plan and the information contained herein has been prepared in accordance with the requirements of 40 CFR 270.14(b)(7) and 264 Subpart D, and the Connecticut Hazardous Waste Regulations Section 22a-449(c)-100 through 110.

Based upon DEP's review comments this Contingency Plan has been updated, revised and reorganized. As of this writing Pratt & Whitney is working to further update this Contingency Plan to incorporate detailed emergency response and evacuation procedures which will address many types of incidents including those involving hazardous waste. It is recognized that this current Contingency Plan is lacking in its description of these procedures. It is anticipated that the updated plan will be completed by December 31, 1991.

The Contingency Plan will be revised and amended if the facility permit is revised; the plan fails in an emergency; the facility's operations for which the plan has been prepared change in any way that alters the Contingency Plan; the list of Emergency Coordinators, their telephone numbers, and/or addresses change; or the P&W Fire Department emergency equipment changes in a manner which alters the Contingency Plan.

Pratt & Whitney's Concentrated Waste Treatment Plant also handles concentrated wastewater, characteristic hazardous wastes, solvents, reclaimed and waste oils and solvent/oil mixtures for processing and disposal. Waste oils are characterized then segregated for reclaim or disposal. These oils are transferred from 55-gallon drums into one of three waste oil tanks at the Concentrated Waste Treatment Plant (CWTP). Licensed vendors then pick-up bulk loads for reclaim or disposal at permitted TSDF's. Waste soluble oil obtained within the manufacturing complex is collected in 500-gallon portable tanks and transported to one of two "Jeffrey" sludge separators from which the liquid fraction is pumped to the CWTP for further treatment and disposal.

Hazardous wastes will be stored at the facility in the Centralized Waste Storage & Transfer Facility (CWS&TF), as well as in eight (8) less than 90 day storage areas as follows:

Description

- ° Rentschler Airport - Container Storage Building
- ° Three 10,000 gallon underground storage tanks (CWTP-3)
- ° Experimental Test Area Oil House
- ° Main Oil House
- ° CWTP-5
- ° CWTP-6
- ° Roll-off Storage Area South of Maintenance Building
- ° Salvage Fuel Tanks in South Tank Farm

6. Stormwater Drainage

Most storm water which falls onto the site is collected and discharged into a series of catch basins and storm sewers which flow into either Willow Brook to the north or into Pewterpot Brook to the south. Both of these brooks empty into the Connecticut River which is located about one-half mile west of the main factory complex. All discharges emanating from the factory complex containing treated wastewater, industrial cooling water, and/or similar discharges are being monitored under the NPDES permit program (refer to Figure 2 on the following page for the locations of the NPDES monitoring points).

7. Plan/Policy

This document is designed to protect personnel, property, and the environment from hazards associated with accidental discharges and emergency incidents at the Pratt & Whitney (P&W) East Hartford facility. This document establishes policy and creates procedures, methods and measures, to be taken to prevent and/or contain spills, and countermeasures to minimize any adverse impact to the environment, to reduce safety and health hazards from fires, explosions or any sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil or surface water. This is also a plan setting standards for the acceptable management of hazardous wastes encountered in emergency incidents.

(2) HAZARDOUS WASTE RELEASE/INCIDENT

- a) In addition to the notifications made under (1), any spill or release of a hazardous waste which exceeds the reportable quantity (RQ) for that waste must be reported immediately to:

The National Response Center at 800-424-8802

Hazardous wastes on the CERCLA list have the RQ's given on the list. (A combined CERCLA and EHS list with RQ's is available in the Environmental Protection Group.) All other hazardous wastes not on the CERCLA list have RQ's of 100 pounds, except for wastes which exhibit the characteristic of toxicity. Toxic wastes have the RQ's listed on the CERCLA table for the contaminant on which the characteristic of EP toxicity is based. The RQ applies to the waste itself, not merely to the toxic contaminant. (If more than one RQ applies, always use the lowest.)

If the emergency coordinator determines that the facility has had a release, fire or explosion that could threaten human health or the environment outside the facility, this should also be reported immediately to:

East Hartford Local Emergency Planning Committee
at 203-289-2781

- b) Within 15 days after the incident requiring implementation of the Contingency Plan, a written report on the incident must be submitted to the EPA Regional Administrator and the Commissioner of the DEP. The report must include:

- Name, address and telephone number of the owner or operator
- Name, address and telephone number of the facility
- Date, time and type of incident
- The extent of injuries, if any
- An assessment of actual or potential hazards to human health or the environment
- Estimated quantity and disposition of recovered material that resulted from the incident.

REFERENCES: CERCLA - 40 CFR Part 302
Federal Hazardous Waste Regs. - 40 CFR Part 264 Subpart D
Connecticut Hazardous Waste Regs. - 22a-449(c)-100 through 110

SECTION G - PERSONNEL TRAINING

1. General

Owners and operators of hazardous waste treatment, storage and disposal facilities are required to provide hazardous waste management personnel with training in hazardous waste management and spill response procedures. A description of Pratt & Whitney's personnel training program is contained herein. This program addresses the East Hartford Facility for regulatory requirements related to hazardous waste management.

2. Training Program

The personnel training program at the P&W East Hartford facility addresses the facility training needs for regulatory requirements related to the management of hazardous waste. The main features of the personnel training program are presented below.

(a) Program Overview

The personnel training program consists of a modularized approach which divides training into its smaller, simpler tasks. This approach allows specific training for people performing different processes and/or using different materials. Each trainee proceeds through a logical module flow, called a curriculum path, based on his training needs. This allows a more effective transfer of acquired knowledge from the classroom to the job.

The program consists of the following major components:

- (i) Module List
- (ii) Job Function Categories
- (iii) Training Matrix
- (iv) Module Descriptions

The training curriculum described below is a more detailed discussion of the above major components.

(b) Training Curriculum

The main components of the training curriculum are discussed in this section, in the same order as listed above.

The Module List contains a listing of the training modules in the P&W Environmental, Health and Safety (EHS) training system. The Module List contains the course codes and course titles.

The Job Function Categories component consists of groupings of job functions with the corresponding group code. Certain group codes are used to identify employees that, due to their job duties, may be required to handle special types of materials, and would therefore be required to receive special training.

The Training Matrix correlates the various group codes with the required training modules, including refresher courses. The matrix shows how the job function categories match up against the training modules and refresher courses.

The Module Descriptions provide an explanation of the content of each module, including refresher courses.

(c) Training Computer System

The training computer system is the administrative and tracking mechanism used to assist in the implementation of the Training Curriculum described above. Individual employee records indicate assigned job function categories, training requirements and training history. Course completion data are entered into the system and employee profiles are available on computer terminals which list these courses.

The system also tracks changes in employee status to indicate new hires and transfers who require initial or additional training.

(d) Responsibilities

The East Hartford Training Administrator oversees the training program for the East Hartford site, audits for compliance to regulatory and program requirements, and works with the P&W Group Environment, Health & Safety Organization to maintain the course curriculum and develop training in response to new requirements or changes.

The employee's supervisor is responsible for assigning each employee a group code and ensuring that employees attend required training modules.

(e) Course Content

The course content is included in the Training Module Descriptions and a Training Matrix is used to specify which course modules are required for each job function category. Course content outlines for courses related to hazardous waste management are provided in Appendix G-1.

Topics related to hazardous waste are covered in a series of course modules. The content of each module is tailored to the specific needs of the audience attending the course.

(f) Frequency

The module titled "ENVIRONMENTAL TRAINING FOR EMPLOYEES" is delivered within 6 months of initial employment or transfer into an applicable category. Refresher courses are provided annually thereafter. Other modules are delivered in a timely manner such that the employee receives appropriate training before performing duties for which this training is prerequisite.

3. Personnel Trained

Individuals with hazardous waste management responsibilities at the facility, including emergency response personnel, receive training under this program. Job titles for the positions currently trained at the facility are listed below along with a brief description of the hazardous waste management responsibilities of the position. The names of the specific individuals filling these positions is maintained at the East Hartford facility in the operating record.

- a. Within the Environmental Protection Group the following have been trained:

Manager, Environment, Health & Safety
Manager, Facilities Engineering
Supervisor, Facilities Engineering
Facilities Project Engineer
Sr. Facilities Engineer
Facilities Engineer
Engineering Associate
Foreman (Supervisor), Manufacturing Support or
Facility Services

These individuals are responsible for the overall management of hazardous waste and facility environmental compliance. Their duties require that they maintain operating logs and ensure regulatory compliance. Recordkeeping responsibilities include monitoring records, inspection logs, personnel training records and other required records. Some of these individuals also act as environmental compliance coordinators, have emergency response duties in coordination with the Incident Commanders, review regulations, or are involved in systems management. These individuals receive training per the following two modules:

*ENVIRONMENTAL TRAINING FOR EMPLOYEES

*TREATMENT, STORAGE, DISPOSAL AND SHIPMENT OF
HAZARDOUS WASTE

Some of these individuals also receive training per the module titled "EMERGENCY RESPONSE LEVEL 3 - HAZARDOUS MATERIALS TECHNICIAN".

- b. All Waste Treatment Operators are trained. Their job titles are as follows:

Lead Environmental Systems Servicer
Environmental Systems Servicer
Utility Worker - Mechanical

These personnel are involved in the Waste Treatment Plant operations, hazardous waste movement and storage. These individuals receive training per the following modules:

*ENVIRONMENTAL TRAINING FOR EMPLOYEES

*TREATMENT, STORAGE, DISPOSAL AND SHIPMENT OF HAZARDOUS WASTE

*EMERGENCY RESPONSE LEVEL 3 - HAZARDOUS MATERIALS TECHNICIAN

- c. Emergency response personnel at the facility are also trained. These individuals can have Incident Commander duties, Fire Protection duties, including fires involving hazardous waste, and equipment inspection and emergency preparedness responsibilities. Their job titles and corresponding job codes are as follows:

Fire Protection Engineer
Fire Chief
Fire Captain
Fire Lieutenant
Senior Equipment Services Technician
Plant Protection Communications Operator
Emergency Equipment Operator
Maintainer, Portable Fire Equipment/
Fire Fighter
Driver, Fire Apparatus
Plant Protection Officer

Some of these individuals receive training per the following modules:

*ENVIRONMENTAL TRAINING FOR EMPLOYEES

*EMERGENCY RESPONSE LEVEL 3 - HAZARDOUS MATERIALS TECHNICIAN

4. Training Instructors

The training courses are delivered using a variety of techniques including live instruction, video taped instruction, participant's manuals, etc. Instructors are in-house personnel or outside contractors with particular expertise in the course material. Instructors are carefully selected to ensure effectiveness.

APPENDIX G-1

COURSE CONTENT OUTLINES

ENVIRONMENTAL TRAINING FOR EMPLOYEES

- Resource Conservation and Recovery Act (RCRA)
- Components of Hazardous Waste Management
- Hazardous Waste Management Requirements for Large Quantity Generators
- Hazardous Waste Accumulation and Storage:
 - *Point of Generation Accumulation Area Standards (as applicable).
 - ° Container Management Practices for Point of Generation Accumulation Areas.
 - ° Inspection of Point of Generation Accumulation Areas.
 - *Less than 90-Day Storage Area Standards (as applicable).
 - *Greater than 90-Day Storage Area Standards (as applicable).

TREATMENT, STORAGE, DISPOSAL AND SHIPMENT OF HAZARDOUS WASTE

- Waste Analysis
 - *Written Waste Analysis Plan
 - *Obtaining a Representative Sample
- Security
 - *Site Control
 - *Posted Signs
- Inspections
 - *Developing and following a written Inspection Schedule
 - *Remedying deterioration or malfunctions
- Overview of Large Quantity Generator (LQG) requirements:
 - *Container management and handling
 - *Preparedness and Prevention
 - *Contingency Planning and Emergency Procedures
- Manifest System
- TSDF waste feed cut-off systems, communications and alarm systems, and shutdown of operations.

EMERGENCY RESPONSE LEVEL 3 - HAZARDOUS MATERIALS TECHNICIAN

- Know how to implement the Emergency Response Plan and Contingency Plan.
- Know the classification, identification and verification of known and unknown materials by using field survey instruments and equipment.
- Be able to function within an assigned role in the Incident Command System.
- Know how to select and use proper specialized chemical personal protective equipment provided to the hazardous materials technician.
- Understand hazard and risk assessment techniques.
- Be able to perform advance control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available within the unit.
- Understand and implement decontamination procedures.
- Understand termination procedures.
- Understand basic chemical and toxicological terminology and behavior.

SECTION H - CLOSURE PLAN AND FINANCIAL REQUIREMENTS

A. INTRODUCTION

The present Closure Plan is provided in accordance with the RCRA regulations for closure of the Centralized Waste Storage and Transfer Facility (CWS&TF).

The CWS&TF is presently being constructed to replace the existing container and tank storage areas at the Concentrated Waste Treatment Plant.

The units that P&W is in the process of replacing include five container storage areas (CWTP-1, CWTP-2, CWTP-4, CWTP-5 and CWTP-6) and two tank storage areas (CWTP-2, CWTP-3) and are scheduled to be closed once the CWS&TF has been constructed and is fully operational (estimate is 1993). After closure has been completed, some of these areas may be used for storage of hazardous waste generated on-site for less than 90 days.

Two other areas that are in the process of being closed include the Burn-Zol hazardous waste incinerator and the wax/solvent storage tank. P&W has an approved partial Closure Plan for the Burn-Zol hazardous waste incinerator, and is presently in the process of implementing closure of this area. Furthermore, on December 11, 1990 P&W submitted a notification of partial closure to EPA, Region I and to the CTDEP, to implement closure of the wax/solvent storage tank located in the same building as the former incinerator, in the CWTP area.

The approved partial closure plan for the Burn-Zol hazardous waste incinerator is included in Appendix H-1, and the interim report on closure of this area is included in Appendix H-2. The partial closure plan for the wax/solvent storage tank is provided in Appendix H-3 while the closure plan

for the remaining five container storage areas and two tank storage areas, (CWTP-1 through CWTP-6), is given in Appendix H-4.

Closure will be performed in a manner that:

1. Minimizes the need for further maintenance, and;
2. Controls, minimizes or eliminates to the extent necessary, post/closure release of hazardous wastes to groundwater, surface water or the atmosphere.

A copy of the closure plan will be maintained on-site at the East Hartford facility until the certification of final closure has been submitted to and accepted by the U.S. Environmental Protection Agency (EPA) Region I and the Connecticut Department of Environmental Protection (CTDEP). P&W will notify the EPA Regional Administrator and CTDEP Commissioner at least 45 days prior to the date of final closure is expected to begin. Upon completion of closure, P&W will submit a certification by both P&W and an independent registered professional engineer to the Regional Administrator and the CTDEP Commissioner that the facility has been closed in accordance with the specifications in the approved closure plan. This site-closure certification will include Appendix IX test results, all other pertinent analytical data plus the final confirmation sampling results. Included also will be:

- ° Photographic records of the closure documenting each construction step of the closure process
- ° Contractors daily log
- ° A list of any departure from the approved plan with rationales in accordance with 40 CFR 264.112(c).

In subsequent sections, this Closure Plan provides a description of general methods to be applied and precautions to be taken in closing the Centralized Waste Storage and Transfer Facility. Table H-1 lists the maximum waste inventory, options for ultimate or partial closure and a schedule for ultimate closure of the units. Although partial closure is not foreseeable at the moment, due to the size of the CWS&TF, it is possible that certain areas may undergo partial closure. A summary of specific closure methods applicable to the Centralized Waste Storage and Transfer Facility are described in detail in the following sections.

The term "area" is used herein to signify each one of the container storage areas, tank storage areas, transporter unloading stations, truck pads, fork lift pads, or staging areas being individually gridded and sampled as outlined in Figure H-1. The term "unit" on the other hand, applies to the Centralized Waste Storage and Transfer Facility and to each individual building (CWTP-1 through CWTP-6) within the Concentrated Waste Treatment Plant. For example, the unit CWTP-2 (Barrel Building) is comprised of two areas, the container storage area and the tank storage area.

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Pratt & Whitney
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APPENDIX H-4

CLOSURE PLAN OF
CWTP-1 THROUGH CWTP-6

RCRA CLOSURE PLAN
OF
CWTP-1 THROUGH CWTP-6

RESOURCE CONSERVATION AND RECOVERY ACT
CONCENTRATED WASTE TREATMENT PLANT
EAST HARTFORD, CONNECTICUT

December, 1990

Revised February 15, 1991

Revised September 5, 1991

Revised April 27, 1992

Prepared for:

United Technologies Corporation
Pratt & Whitney
400 Main Street
East Hartford, Connecticut
EPA ID # CTD990672081

Prepared by:

Loureiro Engineering Associates
100 Northwest Drive
Plainville, CT 06062

Comm. No. 971-10
971-12
971-25
68ET212

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ACRONYMS

CSP:	Clean Standard Parameter
CTAL:	Connecticut Action Level
CTDEP:	Connecticut Department of Environmental Protection
CWS&TF:	Centralized Waste Storage & Transfer Facility
CWTP:	Concentrated Waste Treatment Plant
EPA:	U.S. Environmental Protection Agency
MCL:	Maximum Contaminant Level
P&W:	Pratt & Whitney
QA/QC:	Quality Analysis/Quality Control
RCRA:	Resource Conservation and Recovery Act
RfD:	Reference Dose
RSD:	Risk Specific Dose

A. INTRODUCTION

This Closure Plan is provided in accordance with RCRA Regulations for five of the active units at the Concentrated Waste Treatment Plant (CWTP), these units include the following seven storage areas:

- | | | |
|-----|--|----------|
| (1) | Treatment Building, Container Storage Area | (CWTP-1) |
| (2) | Barrel Building, Container Storage Area | (CWTP-2) |
| (3) | Barrel Transporter Storage Pad | (CWTP-4) |
| (4) | Storage Building A, Container Storage Area | (CWTP-5) |
| (5) | Storage Building B, Container Storage Area | (CWTP-6) |
| (6) | Barrel Building, Tank Storage Area | (CWTP-2) |
| (7) | Underground Oil Tanks | (CWTP-3) |

Five of these units are container storage areas, while the other two are tank storage areas. All of the tanks have secondary containment, although some of the ancillary piping does not.

Closure of these facilities will be performed in a manner that:

1. Minimizes the need for further maintenance, and;
2. Controls, minimizes or eliminates to the extent necessary, post-closure release of hazardous wastes to groundwater, surface water or the atmosphere.

A copy of the closure plan will be maintained on-site at the East Hartford Facility until the certification of closure has been submitted to and accepted by the U.S. Environmental Protection Agency (EPA) Region I and the Connecticut Department of Environmental Protection (CTDEP). P&W will notify the EPA Regional Administrator and CTDEP Commissioner at least 45 days prior to the date final closure is expected to begin. Upon completion of closure of each

area, P&W will submit a certification by both P&W and an independent registered professional engineer to the Regional Administrator and the CTDEP Commissioner that the facility has been closed in accordance with the specifications in the approved closure plan. The closure certifications will include Appendix IX test results, all other pertinent analytical data plus the final confirmation sampling results. Included also will be:

- ° Photographic records of the closure documenting each construction step of the closure process,
- ° Contractor's daily log, and
- ° A list of any departure from the approved plan with rationales in accordance with 40 CFR 264.112(c).

In subsequent sections, this Closure Plan provides a description of general methods to be applied and precautions to be taken in closing the hazardous waste storage facilities. Table 1 lists the maximum waste inventory, options for ultimate or partial closure and a schedule for ultimate closure of the units. A summary of specific closure methods applicable to the various systems at this facility are described in detail in the following sections.

The term "area" as used herein signifies each of the container storage areas and tank storage areas being individually gridded and sampled as outlined in Figure 1. The term "unit" on the other hand, applies to the Centralized Waste Storage and Transfer Facility and to each individual building (CWTP-1 through CWTP-6) within the Concentrated Waste Treatment Plant. For example, the unit CWTP-2 (Barrel Building) is comprised of two areas, the container storage area and the tank storage areas.

B. FACILITY DESCRIPTION

P&W East Hartford generates a variety of hazardous waste and receives waste from P&W satellite plants located in Connecticut, Maine and New York. Currently these wastes are managed in eleven (11) storage tanks (8 above ground and 3 underground) and five (5) container storage areas all located within an area known as the Concentrated Waste Treatment Plant (CWTP). These operations are located in an area near the northern end of the East Hartford plant complex.

Pratt & Whitney is presently constructing a new Centralized Waste Storage & Transfer Facility (CWS&TF). The CWS&TF is being constructed to replace the existing container and tank storage area at the Concentrated Waste Treatment Plant. It is estimated that the CWS&TF will be fully operational within 1993. Wastes generated on-site are also managed at other locations within the facility in containers and tanks for less than ninety (90) days.

The building layout and the exact location of the various storage areas at the Concentrated Waste Treatment Plant, covered by the present Closure Plan are shown in Figure 1.

C. CLOSURE REQUIREMENTS

a. General

This section provides a description of general methods to be applied and precautions to be taken in closing the hazardous waste storage areas. Table 1 lists the maximum waste inventory, options for ultimate or partial closure, and a schedule for ultimate closure of the areas.

In order to determine the effectiveness of the closure activities, surface samples will be analyzed both before and after decontamination. A list of hazardous constituent parameters to be used in establishing the performance standard will be developed for each storage area. These clean standard parameter (CSP) lists will consist of all the 40 CFR 264, Appendix IX parameters (Appendix IX) detected during pre-decontamination sampling, and certain 40 CFR 261 Appendix VIII parameters (Appendix VIII). The Appendix VIII parameters will be selected based on the potential for their presence in any given storage area. The inclusion of specific Appendix VIII parameters will be based on a review of all available information including:

- ° Storage Records
- ° Waste Product Records
- ° Material Safety Data Sheets
- ° Process Information
- ° Waste Characterization Information
- ° Monitoring Parameters from NPDES-permitted discharge

Prior to decontaminating storage area surfaces, the surfaces will be sampled and analyzed for all Appendix IX constituents. After decontamination, samples of each storage area surface will be analyzed for each of the

TABLE 1

CLOSURE PLAN SUMMARY
CWTP
EAST HARTFORD, CONNECTICUT

<u>Item</u>	<u>Process</u>	<u>Process Code</u>	<u>Maximum Inventory</u>	<u>Closure Options Partial/Ultimate</u>	<u>Schedule For Ultimate Closure Start*/Complete</u>	<u>Year</u>
CWTP-1	Treatment Buildings: Container Storage Area	S01		x	April, September	1993
CWTP-2	Barrel Building: Container Storage Area	S01	37,360 gallons Total	x	April, September	1993
CWTP-4	Barrel/Transporter Storage Pad	S01		x	April, September	1993
CWTP-5	Container Storage Area	S01	19,000 gallons	x	April, September	1993
CWTP-6	Container Storage Area	S01	15,400 gallons	x	April, September	1993
CWTP-2	Barrel Building: Tank Storage Area	S02		x	April, September	1993
CWTP-3	Underground Oil Tanks	S02	85,000 gallons Total	x	April, September	1993

*Assumed start date. Completion date based on estimated time of performance of closure.

PEW - EH
RCRA CLOSURE PLAN
CONTAINER/TANK STOR. AREAS
APRIL 1992 REV. NO. 4

parameters on the CSP list in order to demonstrate that the cleanup criteria have been met. A clean standard for each identified parameter on the CSP list will be developed for all exposure pathways. The pathways to be addressed are:

- Direct Ingestion
- Dermal Contact

In addition, the inhalation pathway will be considered during the closure activities and appropriate personal protective equipment will be used.

Health/risk based target standards will be established for each parameter identified and each of the above exposure pathways. The clean standards to be used as specified in the Interim Final RCRA Facility Investigation (RFI) Guidance, EPA 530/SW-89-031, May 1989 are:

- Maximum contaminant levels (MCLs)
- Risk-specific doses (RSD)
- Reference doses (RfD)
- State of Connecticut Action Levels (CTAL).

Later versions of this document may be used if available at the time of closure. The only exceptions to this hierarchy will be if a waste constituent has an RfD lower than its RSD, or if a CTAL is lower than the EPA values. In this case the more stringent values will be used.

In order to establish the clean-up criteria for the various exposure pathways, the following performance standards will be used.

If EPA or State of Connecticut recommended exposure limits do not exist for a constituent at the time of closure, the standard will be background levels. If background values are used, they will be statistically verified. Any background values that are shown to be in excess of the health/risk based standards will not be used unless it is demonstrated that the residual constituents are truly indicative of background concentrations and not the result of waste contamination.

Background concrete samples will be collected from areas unaffected by manufacturing processes, or waste or product storage. If possible, concrete samples will be collected from the same phase of construction as the installation of the storage areas themselves. Once the CSP list is developed, specific sample handling and analytical methods will conform to those specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846.

It should be noted that concrete samples have already been collected and analyzed during the construction of the container storage areas CWTP-5 and CWTP-6, prior and to storing any waste or other material in these areas.

This testing data is considered representative of background conditions, since it provides information on the composition of the concrete prior to any use of the building.

b. General Closure Requirements

1. Health and Safety - A Health and Safety (H&S) Plan will be prepared in conformance with the requirements found in 29 CFR parts 1910 and 1926, the NIOSH/OSHA/USCG/EPA Guidance Manual for Hazardous Waste Site Activities (NIOSH No. 85-115), and US EPA "Standard Operating Safety Guides".

The Health and Safety Plan will address all hazardous waste activities associated with closure of the units CWTP-1 through CWTP-6 at P&W. More specifically, the plan will:

- provide a description of the site,
- identify key personnel,
- assign responsibilities to H&S personnel,
- provide an analysis and evaluation of the hazards associated with each activity,
- specify initial levels of protection required and action levels for additional protection,
- establish training requirements for participating personnel,
- include provisions for medical surveillance,
- describe air monitoring procedures and requirements,

- outline work zones (exclusion, contamination reduction and decontamination zone), and
- describe decontamination procedures for personnel, small equipment and heavy equipment and machinery.

The three work zones are described in further detail below:

(i) Exclusion Zone:

The Exclusion Zone will isolate the area of contaminant generation and restrict (to the extent possible) the spread of contamination from active areas of the site to support areas and off-site locations. This area will encompass all intrusive work and it will be demarcated by the Hot Line (i.e., a tape or rope line or physical barrier).

(ii) Contamination Reduction Zone:

The Contamination Reduction Zone (CRZ) will start at the Hot Line and extend to the Contamination Control Line. When contaminated personnel, equipment, or materials cross the Hot Line, they are assumed to be contaminated from site operations. Being subjected to the decontamination process, they become less contaminated; when they reach the Contamination Control Line, they are considered clean and can exit this zone without spreading contamination.

Within the Contamination Reduction Zone is the Contamination Reduction Corridor (CRC), where materials necessary for personnel and equipment decontamination are kept. A separate area shall be established for heavy equipment decontamination. In addition, certain safety equipment (e.g., emergency eye wash, fire extinguisher, and first aid kit) are staged in this zone.

(iii) Support Zone:

The Support Zone is the outermost zone of the site, separated from the Contamination Reduction Zone by the Contamination Control Line and is considered a clean area.

The Support Zone contains the necessary storage of equipment, stockpiling of material, and support facilities (including personal hygiene facilities) for site operations.

The decontamination crew will consist of a minimum of two individuals who will be adequately clothed, including self-contained breathing apparatus, if required, and coveralls. Supervision of the decontamination process will include an individual(s) responsible for operation of the TSDF.

The primary basis for the level of personnel protection selected is determined by:

- ° The type, toxicity, measured concentration, and permissible exposure limits of the chemical substances.
- ° The potential or measured exposure to substances in the air, splashes of liquids, or other direct contact with materials due to the work being performed.

The personal protective equipment used to protect the body against chemical hazards is divided into four categories according to the degree of protection:

- ° Level A - Will be worn when the highest level of respiratory, skin, and eye protection is needed.
- ° Level B - Will be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection is needed.
- ° Level C - Will be worn when the types of airborne substances are known, the concentrations have been measured, and the criteria for using air-purifying respirators are met.
- ° Level D - This level is used where no respiratory or skin hazards are present. Level D protection is primarily a work uniform providing minimal protection.

It is not anticipated that personnel will need to use Levels A or B, although this determination will be made after the complete CSP list is developed and specific hazardous constituents are known.

2. Sudden or Non-Sudden Release, or Fire Hazard - The decontamination process will be considered as an activity presenting a high risk potential for release of hazardous waste or fire/explosion hazard. As such, the appropriate mechanisms of the Contingency Plan will be ready for activation.

3. Scheduling

Completion of closure will be within 180 days of agency approval of the closure plan or from the last receipt of hazardous wastes; whichever occurs later. The schedule for closure including milestone dates follows:

<u>DAY</u>	<u>ACTIVITY</u>
-45	Written notification of anticipated closure.
0	EPA and CTDEP approved closure plan or last receipt of hazardous wastes (if that is later).
90	All hazardous wastes disposed of off-site at permitted facilities. Tanks and appurtenances removed and disposed of off-site at permitted facilities.
100	Inspection for residual wastes complete and all damaged areas identified. Samples collected from damaged areas and analyzed appropriately.
120	Floors and equipment cleaned and rinsed. Confirmatory chip samples taken of the concrete containments and soils.
150	Floor and piping repaired and/or sealed as necessary for further use.
180	Completion of closure and certification submittal to the EPA Regional Administrator and CTDEP Commissioner.

All final closure activities will be supervised and certified by an independent registered professional engineer, in addition to P&W personnel.

P&W may require an extension of closure time depending on the season that closure begins.

4. Partial Closure - Partial closure potential for the five facilities has been noted on Table 1. The potential for partial or ultimate closure exists for all units. The procedures described for ultimate closure would be followed for partial closure. The schedule for ultimate closure is provided in Table 1.

5. Certification - The following certification should be submitted to the EPA Region I Administrator and the Commissioner of CT DEP upon completion of closure:

"I, _____, for Pratt & Whitney, United Technologies
(Name)

Corporation, owner and operator of _____,
(Site)

a hazardous waste storage area and I, _____, P.E.,
(Name)

employed by _____, certify by means of our
(Firm)

signatures, that the facility named above has been closed in accordance with the method specified by the Closure Plan, and attached hereto.

Closure was completed on _____, after receiving the final
(Date)

volume of material on _____".
(Date)

c. Amending the Closure Plan

P&W will amend the closure plan whenever changes in operating plans or facility design affect the closure plan, or whenever there is a change in the expected year of closure. If a request for permit modification is made to authorize a change in operating procedures or facility design, P&W will also request a modification to the Closure Plan at the same time. If a permit modification is made requiring a change in operating procedures or facility design, P&W will make a request for modification of the Closure Plan within 60 days after the change in plans or design occurs.

d. Closure of Container Storage Areas

This section of the closure plan describes the procedures to be followed during closure of the following areas:

- (1) Treatment Building, Container Storage Area (CWTP-1)
- (2) Barrel Building, Container Storage Area (CWTP-2)
- (3) Barrel/Transporter Storage Pad (CWTP-4)
- (4) Storage Building A, Container Storage Area (CWTP-5)
- (5) Storage Building B, Container Storage Area (CWTP-6)

For these areas it is anticipated that the inventory of hazardous wastes remaining at closure will not exceed the maximum inventory value listed in Table 1. For the purpose of this plan all the areas listed above are considered as container storage areas and are discussed jointly below. The procedures for closure of these areas are as follows:

1. Collect two composite concrete chip samples from the containment base of each container storage area. Each composite will be made up of several discrete samples collected from discolored, soft or otherwise damaged areas to represent worst case conditions. Each composite sample will then be analyzed for Appendix IX constituents.
2. Dispose of all remaining hazardous wastes off-site via licensed vendors for disposal at permitted TSDF's.
3. Evaluate the results of Appendix IX analyses and various site-specific records, as discussed in Section C.a above, to establish the clean standard parameter (CSP) list and identify corresponding health/risk based target standards.

4. If health/risk based standards do not exist for a specific parameter at the time of closure, a minimum of four background concrete chip samples will be collected and analyzed for the CSP list. This data will be used for comparison in the absence of health/risk based standards.
5. A Health and Safety Plan, specific to the site being closed and the CSP list, will be prepared to cover the closure activities to be performed. Details on the Health and Safety Plan have been provided in earlier sections.
6. The containment areas will then be scrubbed with the appropriate decontamination solution depending on the type(s) of hazardous waste stored in the area, and thoroughly rinsed with water. A summary of recommended decontamination solutions for various types of hazardous wastes along with the formulations of the decontamination solutions is provided in Table 2.

As an example, a bay used in the past for storage of various types of solvents and other organic compounds in containers, and at times used for storage of alkalies, will have to be decontaminated sequentially with a combination of solutions listed in Table 2. First, the containment area will be scrubbed with a solution containing 5 percent sodium carbonate and 5 percent trisodium phosphate and then it will be triple rinsed with water. After this procedure has been completed, the container storage area will be scrubbed with a dilute solution of hydrochloric acid (1 pint concentrated hydrochloric acid to 10 gallons water) and again triple rinsed with water.

TABLE 2
CLEANER SOLUTION FORMULATIONS

DECON SOLUTION A - A solution containing 5 percent sodium carbonate (Na_2CO_3) and 5 percent trisodium phosphate (Na_3PO_4).

To 10 gallons of water, add 4 pounds of sodium carbonate (soda ash) and 4 pounds of trisodium phosphate. Stir until evenly mixed.

DECON SOLUTION B - A solution containing 10 percent calcium hypochlorite ($\text{Ca}(\text{ClO})_2$).

To 10 gallons of water, add 8 pounds of calcium hypochlorite. Stir with a wooden or plastic stirrer until evenly mixed.

DECON SOLUTION C - A solution containing 5 percent trisodium phosphate. This solution can also be used as a general purpose rinse.

To 10 gallons of water, add 4 pounds of trisodium phosphate. Stir until evenly mixed.

DECON SOLUTION D - A dilute solution of hydrochloric acid (HCl)

To 10 gallons of water, add 1 pint of concentrated hydrochloric acid. Stir with a wooden or plastic stirrer.

<u>TYPE OF HAZARDOUS WASTE</u>	<u>PREFERRED DECONTAMINATION SOLUTION</u>
Inorganic acids, metal processing wastes	A
Heavy metals, i.e., mercury, lead, cadmium	A
Pesticides, fungicides, chlorinated phenols, dioxins,	B
Cyanides, ammonia, and other non-acidic inorganic wastes	B
Solvents and organic compounds, such as trichloroethylene, chloroform, and toluene	C, A
PBBs and PCBs	C, A
Oily, greasy, unspecified wastes	C
Inorganic bases, alkali, and caustic waste	D

Spent decontamination solutions and rinsewaters will be collected in existing floor sumps or will be contained through the use of dikes to prevent wash water from migrating into clean areas. This rinsate will be collected using a wet/dry vacuum, and disposed of as hazardous waste via licensed transporters to permitted disposal facilities, unless verified to be non-hazardous through analytical testing. Similarly, all sweepings, residues or other debris will be disposed of as hazardous waste.

7. All equipment used in closure activities will either be decontaminated or collected and disposed of as hazardous waste. An equipment decontamination zone will be located within the Contamination Reduction Zone (as outlined by the Health & Safety Plan) and will include a high pressure wash area for equipment and vehicles, as needed. Respirators, if used, will be decontaminated daily by setting the cartridges aside, disassembling the masks, placing all parts in a cleaning solution and rinsing them with tap water. Old cartridges, as well as discarded personal protective gear from the decontamination of the container storage areas will be collected and disposed of off-site as hazardous waste. Small manual tools and equipment used during decontamination, such as brushes, gloves, disposable suits, etc., will be collected in a 55-gallon drum and disposed

of as hazardous waste using licensed transporters and permitted disposal facilities. Portions of larger tools (i.e. lifts, hoists) which have come in contact with the waste will be decontaminated by steam cleaning. Particular attention will be paid to tires, under surfaces, points of contact with the ground and horizontal surfaces where dusts or aerosols may have settled. All rinsate generated during decontamination activities will be collected and disposed of as hazardous waste via a licensed vendor, unless verified to be non-hazardous through analytical testing. Additional decontamination procedures will be provided in detail in the Health and Safety Plan.

8. Once decontamination has been completed as described above, the container storage area will be inspected for cracks or other visible signs of deterioration. If cracks or deteriorated areas are observed during the integrity assessment, then the sampling plan discussed below will be modified to include a representative portion of these areas. If sampling of cracks, gaps or damaged and deteriorated areas in the concrete indicate that hazardous constituents may have migrated below the concrete slab, then additional decontamination and/or partial removal of the contaminated surface will be performed. Additional confirmatory sampling will be performed in these areas. In the unlikely situation that the subgrade underneath the slab is found to be contaminated then the Closure Plan would be modified to include

specific clean-up measures for these areas. For container storage areas that include sumps, one of the samples will be collected from the bottom of the sump.

9. If no cracks, or visible signs of deterioration are found, then non-statistical "judgment sampling" of potentially contaminated areas, based on visual observations, is not possible. Instead, verification sampling will be performed according to the following procedure.

Each of the areas, after decontamination, will be gridded and sampled at locations corresponding to randomly selected grid nodes. The size of the grid interval is determined by this generally accepted mathematical formula:

$$GI = (A/3.14)^{0.5}/2, \text{ where:}$$

GI = grid interval, ft

A = area to be gridded, sq. ft.

The calculated value for the grid interval is then rounded off to the nearest integer and the container storage area is gridded.

The number of samples (n) to be obtained from each slab is determined by the square root of the number of grid nodes. A random number table or generator is typically used to determine which grid nodes or grid areas will be sampled.

Table 3 outlines the calculations of the number of verification samples required to be collected from each storage area to generate statistically viable data according to the

TABLE 3
CONTAINER STORAGE AREAS
VERIFICATION SAMPLING

<u>Item</u>	<u>Process</u>	<u>Area</u> <u>(Sq. Ft.)</u>	<u>Grid</u> <u>Interval(Ft)</u>	<u>No. of</u> <u>Grid Nodes</u>	<u>No. of</u> <u>Grid Samples</u>	<u>No. of</u> <u>Sump Samples</u>	<u>Total</u> <u>No. of</u> <u>Samples</u>
CWTP-1	Treatment Building Container Storage Area	450	6	20	4	1	5
CWTP-2	Barrel Building Container Storage Area	3306	16	25	5	6	11
CWTP-4	Barrel/Transporter Storage Pad	900	8	27	5	1	6
CWTP-5	Storage Building A Container Storage Area	3822	17	24	5	3	9
CWTP-6	Storage Building B Container Storage Area	1794	12	21	6	3	9

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procedure outlined above. The number of grid samples is the number of samples statistically required. A random number table procedure was used to calculate the exact location of these samples, which are shown in Figure 1 for each of the container storage areas. In addition to these samples, each containment sump will be sampled, raising the number of samples to be collected to the value shown in the last column of Table 3. The locations of the containment sumps are also shown on Figure 1.

All samples will consist of concrete chip samples collected with an air chisel or concrete drill. The portion of the tool in direct contact with the concrete will be cleaned between samples using an industrial non-phosphate detergent wash and a tap water rinse.

The resulting concrete chips will be transferred directly into laboratory supplied glassware. The field QA/QC program for concrete chip samples will include one duplicate for every 10 samples and one trip blank to accompany the samples to the laboratory. Immediately following sample collection, each sample will be labeled and placed in an iced cooler. The samples will be transported under full chain-of-custody to a State of Connecticut approved laboratory.

The analytical testing and determination procedures are presented in Section D of this Closure Plan.

10. If based on an evaluation of the analytical data (comparison to available health/risk based levels or background) the decontamination effects are deemed incomplete, the

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FIGURE 1

SAMPLING LOCATIONS

**US EPA New England
RCRA Document Management System
Image Target Sheet**

RDMS Document ID # 2353

Facility Name: Pratt & Whitney

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

☒ **Oversized (in Site File)** ☐ **Oversized (in Map Drawer)**

☐ **Page(s) Missing (Please Specify Below)**

☐ **Potential FOIA Exempt** ☐ **Other (Please Provide Purpose Below)**

Description of Oversized Material, if applicable:

Figure 1: Sampling Locations 12/31/1990

☒ **Map** ☐ **Photograph** ☐ **Other (Please Specify Below)**

*** Please Contact the EPA New England RCRA Records Center to View This Document ***

decontamination will be repeated until follow-up sampling demonstrates that parameters are at or below health/risk standards or are consistent with background levels. Any concrete chip sampling areas which exhibit levels consistent with background and either above or below health/risk levels will be considered representative of ambient background levels. Decontamination will then be deemed complete unless it is determined that background samples have been contaminated with the waste.

On the other hand, if repetitive decontamination efforts and subsequent sampling procedures fail to provide satisfactory data, then concrete coring will be performed to determine whether hazardous constituents have reached the subgrade, underneath the concrete slab. If this is the case, P&W will submit a modified Closure Plan to the CTDEP and EPA outlining additional specific procedures to be followed for closure of these areas.

11. Complete the certification of closure as presented in Section C(b)(5) of this Closure Plan. Within 60 days of completion of all closure activities, the Certification of Closure will be sent by registered mail to the EPA Regional Administrator and the Commissioner of the Connecticut Department of Environmental Protection.

e. Closure of Tank Storage Areas

This section describes the procedures to be followed for closure of the tank storage areas which include the following:

- (i) Barrel Building Tank Storage Area (CWTP-2)
- (ii) Underground Oil Tanks (CWTP-3)

The barrel building tank storage area consists of eight above ground tanks with secondary containment and several secondary containment areas for ancillary equipment and loading/unloading stations. The second tank storage area consists of three double wall underground storage tanks with a leak detection system and above ground piping. For each of these areas it is anticipated that the inventory of hazardous wastes remaining at closure will not exceed the maximum inventory value listed in Table 1. Furthermore, the total amount of hazardous waste stored in tanks at any given time in the CWTP-2 and CWTP-3 units will not exceed the quantity listed in the Part A Permit Application.

For the purpose of this plan all the areas listed above are considered as tank storage areas and are discussed jointly below. The underground tanks are double wall tanks. Therefore, verification sampling will not be required at closure for the UST's as long as the leak detection system remains functional and a leak has not been detected. Steps 1 through 4, 8, and 10 through 12 do not apply to the UST's. After proper decontamination and clean closure of the CWTP-3 area, the three underground oil storage tanks will be left in place as functional units for as yet undefined future use, such as less than 90 days storage of on-site generated hazardous wastes.

The procedures for closure of the tank storage areas are as follows:

1. Collect two composite concrete chip samples from the containment base of each tank and ancillary equipment containment structure. Each composite will be made up of several discrete samples collected from discolored, soft or otherwise damaged areas to represent worst case conditions. Each composite sample will then be analyzed for Appendix IX constituents.
2. Dispose of all remaining hazardous wastes off-site via licensed vendors for disposal at permitted TSDF's. Any waste residues remaining in the tanks will be pumped out from the bottom of the tank. Residues remaining in pipings will be flushed out into the tank and also pumped out. A pressure washer will be used as needed to remove additional residues from the tank wall, bottom and associated piping and controls. Caution will be used in entering a confined space, if an entry is required. Rinse solutions and personal protective gear will be compatible with the waste's compatibility grouping. (Additional details will be provided in the Health and Safety Plan). Sludges accumulated at the bottom and/or walls of the tank will be collected and disposed of as hazardous waste via licensed vendors.
3. Evaluate the results of Appendix IX analyses to establish the clean standard parameter (CSP) list and identify corresponding health/risk based target standards.
4. If health/risk based standards do not exist for a specific

parameter at the time of closure, a minimum of four background concrete chip samples will be collected and analyzed for the CSP list.

5. A Health and Safety Plan, specific to the site being closed, and the CSP List, will be prepared to cover the closure activities to be performed.
6. Once all hazardous waste inventory has been removed, all underground waste feed lines will be decontaminated by flushing with the appropriate decontamination solution and then thoroughly rinsed with tap water. After the third rinse the rinsate will be collected and tested for the CSP List. If the rinsate is found to be hazardous, then an additional two-step rinsing procedure will be implemented. The first rinse will consist of a non-hazardous biodegradable degreaser and water solution. This will be followed by a potable water rinse. The rinsate from the second rinse will be collected and tested as above to determine if it is hazardous. If the rinsate is hazardous then the two-step rinsing process will be repeated until the plant tap water rinse is determined to be non-hazardous. All rinsate will be collected and disposed of as hazardous waste. The plant tap water will also be analyzed for the CSP list constituents.
7. All above ground and easily accessible underground piping will be removed and disposed of as hazardous waste. The tank itself and any tank components which have not been decontaminated will

either be decontaminated, dismantled and disposed of as non-hazardous waste as described above, or dismantled and disposed of as a hazardous waste without prior decontamination. The adequacy of decontamination procedures will be assessed by collecting wipe test samples. A minimum of three wipe test samples will be collected from each tank following proper decontamination. The cost estimate, presented in Section D of this Closure Plan is based on the assumption that the tank components will be removed and disposed of off-site as hazardous waste.

Disassembly will be performed by manual dismantling and/or by the use of powered equipment. The option is available to use both hot or cold cutting techniques. The size of stockpiled components will be directly influenced by the disposal facility's requirements for landfilling. It is anticipated that all piping will be cut into four foot sections and that larger components will not exceed 10 feet in any dimension.

The three double wall underground oil storage tanks, after decontamination will be left in place as functional units for non-permitted future use such as less than 90 day storage of hazardous wastes generated on-site.

Wipe test samples will be collected from each of the three steel tanks. One wipe sample will be collected from each 100 sf area within the tank. A minimum of three wipe test samples will be collected from each tank and each wipe sample will cover an area of approximately 3 sf (about 0.25 square meters). The wipe test

samples will be used to assess the adequacy of the decontamination procedures. If the results indicate that the decontamination efforts were insufficient, then additional decontamination will follow until wipe test samples produce satisfactory results.

8. After removal of the tank components, as described above, the floor of the concrete containment area will then be scrubbed with the appropriate decontamination solution depending on the type(s) of hazardous waste stored in the area, and then thoroughly rinsed with water. A summary of recommended decontamination solutions for various types of hazardous wastes along with the formulations of the decontamination solutions has been provided in Table 2. The containment area for CWTP-2 includes the tanker pads, sumps, overflow tank, the transporter dump stations and the pump room in the basement. The dump station servicing CWTP-3 would also be included.

Spent decontamination solutions or rinsewaters will be collected in existing floor sumps or will be contained through the use of dikes to prevent washwater migrating into clean areas. This rinsate will be collected using a wet/dry vacuum then disposed of as hazardous waste. Similarly, all sweepings, residues, or other debris will be disposed of as hazardous waste via licensed vendors.

9. All equipment used in closure activities will either be decontaminated or collected and disposed of as hazardous waste.

An equipment decontamination zone will be located within the Contaminant Reduction Zone (as outlined by the Health & Safety Plan) and will include a high pressure wash area for equipment and vehicles, as needed. Respirators, if used, will be decontaminated daily by setting the cartridges aside, disassembling the masks, placing all parts in a cleaning solution and rinsing them with tap water. Old cartridges, as well as discarded personal protective gear from the decontamination of the tank storage areas will be collected and disposed of off-site as hazardous waste. Small manual tools and equipment used during decontamination, such as brushes, gloves, disposable suits, etc., will be collected in a 55-gallon drum and disposed of as hazardous waste using licensed transporters and permitted disposal facilities. Portions of larger tools (i.e. lifts, hoists) which have contacted the waste will be decontaminated by steam cleaning. All rinsate generated during decontamination activities will be collected and disposed of as hazardous waste via permitted TSDFs.

10. Once decontamination has been completed as described above, the tank storage area containments will be inspected for cracks or other visible signs of deterioration. If during the integrity assessment cracks or deteriorated areas are observed, then the sampling plan presented below will be modified to include a representative portion of these areas. If sampling of cracks,

gaps or damaged and deteriorated areas in the concrete indicate that hazardous constituents may have migrated below the concrete slab, then additional decontamination and/or partial removal of the contaminated surface will be performed. Additional confirmatory sampling will be performed in these areas. In the unlikely situation that the subgrade underneath the slab is found to be contaminated then the Closure Plan would be modified to include specific clean-up measures for these areas. Containment sumps will be sampled in addition to the samples discussed above.

If no cracks or other visible signs of deterioration are found, then non-statistical "judgment sampling" of potentially contaminated areas, based on visual observations, is not possible. Instead, verification sampling will be performed according to the following procedure:

Each of the areas, after decontamination, will be gridded and sampled at locations corresponding to randomly selected grid nodes. The size of the grid interval is determined by this generally accepted mathematical formula:

$$GI = (A/3.14)^{0.5}/2, \text{ where:}$$

GI = grid interval, ft

A = area to be gridded, sq. ft.

The calculated value for the grid interval is then rounded off to the nearest integer and the tank containments are gridded. The number of samples to be obtained from each slab is determined by the square root of the number of grid nodes. A random number table or generator is typically used to determine which grid nodes or grid areas will be sampled.

Table 4 outlines the calculations of the number of verification samples required to be collected from the Barrel Building, Tank Storage Area. The truck containment pad, containment tank at the barrel building and buried process piping area (ancillary piping for the CWTP-5 Tank Storage Area) will be gridded separately as shown in Table 4 and Figure 1. No sampling is required for the three underground oil tanks (CWTP-3) since secondary containment requirements for this system are met by the utilization of a double wall tank with an interstitial monitoring system assuming that this system has remained operational and a leak has not been detected.

The number of grid samples is the number of samples statistically required. A random number table procedure was used to calculate the exact locations of these samples, which are shown on Figure 1. In addition to these samples, the containment sumps will be sampled, raising the number of samples to be collected to the value shown in the last column of Table 4. The locations of the containment sumps are also shown on Figure 1.

Additional sampling will be performed in the vicinity of the CWTP-2 Tank Storage Area. As shown in Figure 1, five soil samples will be collected and analyzed from trenches created by the removal of underground pipes running from CWTP-2 to CWTP-1. This process piping is buried and only part of it is contained within concrete trenches.

In addition, as shown in Figure 1, certain piping sections run underneath the floor of the CWTP-2 facility. Two soil borings will be performed through the concrete floor in the

TABLE 4
CLOSURE OF TANK STORAGE AREAS
VERIFICATION SAMPLING

Item	Process	Area (Sq. Ft.)	Grid Interval	No. of Grid Nodes	No. of Grid Samples	No. of Sump Samples	Total No. of Samples
CWTP-2	Barrel Building Tank Storage Area	1110	9	24	5	1	6
	Barrel Building Truck Containment Pad and Containment Tank	1800	12	20	4	3	7
		112	3	20	4	-	4
	Buried Process Piping*	480	6	27	5	-	5
CWTP-3	Underground Oil Tanks						NA**

NA: Not Applicable

* Two additional soil samples will be collected from soil borings underneath the facility's floor (Refer to Figure 1)

** No sampling required for these double walled tanks (secondary containment) equipped with a leak detection system.

The sump samples (judgmental sampling) will be collected in addition to the grid samples (statistical sampling). Other judgmental samples will be collected following an integrity assessment of each of the areas being closed.

CWTP-2 area in the locations shown in Figure 1. The 7 soil samples (five from the buried piping trenches and two underneath the concrete floor) will be used to evaluate whether the soil underneath the buried process piping is clean.

Closure of the process piping section leading from the CWTP-2 area to the Wax Building is being addressed in the Closure Plan for the Burn-Zol incinerator.

All other samples will consist of concrete chip samples collected with an air chisel or concrete drill. The portion of the tool in direct contact with the concrete will be cleaned between samples using an industrial non-phosphate detergent wash and a potable water rinse.

The resulting concrete chips will be transferred directly into laboratory supplied glassware. The field QA/QC program for concrete chip samples will consist of one field duplicate for every 10 samples and one trip blank to accompany the samples to the laboratory. Immediately following sample collection, each sample will be labeled and placed in an iced cooler. The samples will be transported under full chain-of-custody to a State of Connecticut certified laboratory.

The analytical testing and determination procedures are presented in Section D of the Closure Plan.

11. If based on an evaluation of the analytical data (comparison to available health/risk based levels and background), the decontamination process is deemed incomplete, the decontamination will be repeated until follow-up sampling demonstrates that

parameters are at or below health/risk standards or are consistent with background levels. Any concrete chip sampling areas which exhibit levels consistent with background and either above or below health/risk levels will be considered representative of ambient background levels and therefore the decontamination efforts will be deemed complete unless background samples are deemed to be contaminated by the waste. On the other hand, if repetitive decontamination efforts and subsequent sampling procedures fail to provide satisfactory data, then concrete coring will be performed to determine whether hazardous constituents have reached the subgrade, underneath the concrete slab. If this is the case, P&W will submit a modified Closure Plan to the CTDEP and EPA outlining additional specific procedures to be followed for closure of these areas.

12. Complete the certification of closure as presented in Section C(b)(5) of this Closure Plan. Within 60 days of completion of all closure activities, the Certification of Closure will be sent by registered mail to the EPA Regional Administrator and the Commissioner of the Connecticut Department of Environmental Protection.

D. LABORATORY ANALYSIS AND DATA EVALUATION

a. Laboratory Analysis

The analytical methods that will be used for analysis of concrete samples will be those described in the latest edition of EPA Publication SW-846 - Test Methods for Evaluating Solid Waste. The designated laboratory will follow all applicable internal QA/QC procedures outlined in SW-846.

Upon receipt of the analytical data, an initial evaluation of the results will be performed through data validation. Data validation includes a review of field QA/QC procedures (i.e. trip blanks, field duplicates) and laboratory QA/QC procedures (i.e. holding times, blind duplicate analysis, surrogate recoveries). Data points that are not adequately supported by the QA/QC procedures will be referred to the sampling team and/or the laboratory for appropriate corrective actions.

Upon completion of data validation, the results will be compared to background data points and the relevant and appropriate regulatory standards and criteria. An explanation of how this will be performed is presented below.

b. Data Evaluation

As previously stated, decontamination of the storage areas will be demonstrated complete by concrete chip sampling and comparison to regulatory and background levels.

Test results will be compared to the Health/Risk based target standards specified in the interim final RCRA Facility Guidance (EPA-530/SW-89-031). If any parameter exceeds the applicable target standard, then decontamination will be deemed incomplete in the area

of that sample. Decontamination efforts will continue until follow-up sample data achieves the applicable target standard.

For constituents for which a health/risk based standard is not available, comparison will be made to background data. The analytical results of these samples will be statistically analyzed using Cochran's approximation to the Behrens-Fisher Students' t-Test (40 CFR Part 264, Appendix IV). If the reported concentration of a specific constituent is the method detection limit, the numerical value of the method detection limit will be used in calculations. The mean and variance of the background samples will be used to determine if clean standard verification samples contain significant constituent concentrations at a 95 percent confidence level. If any parameter exceeds the corresponding background level, decontamination will be considered incomplete in the area of that sample. Decontamination efforts will continue until follow-up sample data achieves the corresponding background level.

E. MAXIMUM CLOSURE COST ESTIMATE

Maximum closure costs for the seven storage areas are estimated to be \$1,602,300 in December, 1991 dollars. A breakdown of the costs is included in Table 5 through 10b. All costs assume performance of closure activities by a qualified third-party contractor. The estimates assume that the maximum waste inventory will be present at closure.

The closure cost estimate will be revised whenever a change in the closure plan affects the cost of closure. The closure cost will be adjusted annually as described in 40 CFR 264.14(b).

All costs provided include overhead for conventional type of work (construction, sampling, decontamination, etc.). The additional insurance costs (estimated at approximately 7%) account for the incremental overhead required for work involving hazardous waste.

TABLE 5
MAXIMUM CLOSURE COST ESTIMATE

STORAGE BUILDING CWTP-1

<u>ACTIVITY DESCRIPTION</u>	<u>COST</u>
Initial Sampling (Appendix IX)	
2 samples x \$4,500/ea:	\$ 9,000.00
16 mh x \$60/hr:	\$ 960.00
Removal & Disposal of Waste Inventory (1)	
12,500 gal x \$8/gal:	\$100,000.00
Background Sampling & Analysis	
2 samples x \$1,200/ea:	\$ 2,400.00
16 mh x \$60/hr:	\$ 960.00
Concrete Coring Equip. Rental:	\$ 500.00
Development of CSP list	
60 mh x \$60/hr:	\$ 3,600.00
Development of Health & Safety Plan:	\$ 3,000.00
Dismantling and Disposal of Aboveground Tanks and Ancillary Equipment	N/A
Decontamination of Concrete Containments	
40 mh x \$40/hr:	\$ 1,600.00
Equipment Rental:	\$ 3,000.00
Collection & Analysis of Confirmational Samples	
5 samples x \$1,200/ea:	\$ 6,000.00
16 mh x \$60/hr:	\$ 960.00
Removal and Disposal of Contaminated Concrete Allowance (10 tons):	\$ 10,000.00
Data Evaluation & Closure Certification	
80 mh x \$60/hr:	\$ 4,800.00
Subtotal:	\$146,780.00
Insurance (7%):	\$ 10,220.00
Contingency (10%):	\$ 14,500.00
Total (CWTP-1):	<u>\$171,500.00</u>

mh: manhours

(1): Assumes maximum waste inventory present at closure.

TABLE 6
MAXIMUM CLOSURE COST ESTIMATE

STORAGE BUILDING CWTP-2 (CONTAINERS)

<u>ACTIVITY DESCRIPTION</u>	<u>COST</u>
Initial Sampling (Appendix IX)	
2 samples x \$4,500/ea:	\$ 9,000.00
16 mh x \$60/hr:	\$ 960.00
Removal & Disposal of Waste Inventory (1)	
12,500 gal x \$8/gal:	\$100,000.00
Background Sampling & Analysis	
2 samples x \$1,200/ea:	\$ 2,400.00
16 mh x \$60/hr:	\$ 960.00
Concrete Coring Equip. Rental:	\$ 500.00
Development of CSP list	
60 mh x \$60/hr:	\$ 3,600.00
Development of Health & Safety Plan:	\$ 3,000.00
Dismantling and Disposal of Aboveground Tanks and Ancillary Equipment	N/A
Decontamination of Concrete Containments	
40 mh x \$40/hr:	\$ 1,600.00
Equipment Rental:	\$ 3,000.00
Collection & Analysis of Confirmational Samples	
11 samples x \$1,200/ea:	\$ 13,200.00
24 mh x \$60/hr:	\$ 1,440.00
Removal and Disposal of Contaminated Concrete Allowance (10 tons):	\$ 10,000.00
Data Evaluation & Closure Certification	
80 mh x \$60/hr:	\$ 4,800.00
Subtotal:	\$154,460.00
Insurance (7%):	\$ 10,800.00
Contingency (10%):	\$ 15,440.00
Total (CWTP-2): (Containers)	<u>\$180,700.00</u>

mh: manhours

(1): Assumes maximum waste inventory present at closure.

TABLE 7
MAXIMUM CLOSURE COST ESTIMATE
STORAGE BUILDING CWTP-2 (TANKS)

<u>ACTIVITY DESCRIPTION</u>	<u>COST</u>
Initial Sampling (Appendix IX)	
2 samples x \$4,500/ea:	\$ 9,000.00
16 mh x \$60/hr:	\$ 960.00
Removal & Disposal of Waste Inventory (1)	
45,000 gal x \$2/gal:	\$ 90,000.00
Background Sampling & Analysis	
2 samples x \$1,200/ea:	\$ 2,400.00
16 mh x \$60/hr:	\$ 960.00
Concrete Coring Equip. Rental:	\$ 500.00
Development of CSP list	
60 mh x \$60/hr:	\$ 3,600.00
Development of Health & Safety Plan:	\$ 3,000.00
Dismantle and Disposal of Aboveground Tanks and Ancillary Equipment	
80 mh x \$40/hr:	\$ 3,200.00
Disposal:	\$ 100,000.00
Decontamination of Concrete Containments	
40 mh x \$40/hr:	\$ 1,600.00
Equipment Rental:	\$ 3,000.00
Collection & Analysis of Confirmational Samples	
22 samples x \$1,200/ea:	\$ 26,400.00
64 mh x \$60/hr:	\$ 3,840.00
Removal and Disposal of Contaminated Concrete Allowance (20 tons):	\$ 20,000.00
Data Evaluation & Closure Certification	
80 mh x \$60/hr:	\$ 4,800.00
Subtotal:	\$ 273,260.00
Insurance (7%):	\$ 19,140.00
Contingency (15%):	\$ 41,000.00
Total:	\$ 333,400.00
(CWTP-2, Tanks)	

mh: manhours

(1): Assumes maximum waste inventory present at closure.

TABLE 8
MAXIMUM CLOSURE COST ESTIMATE
STORAGE BUILDING CWTP-3

<u>ACTIVITY DESCRIPTION</u>	<u>COST</u>
Initial Sampling (Appendix IX)	
2 samples x \$4,500/ea:	\$ 9,000.00
16 mh x \$60/hr:	\$ 960.00
Removal & Disposal of Waste Inventory (1)	
30,000 gal x \$2/gal:	\$ 60,000.00
Background Sampling & Analysis	
2 samples x \$1,200/ea:	\$ 2,400.00
16 mh x \$60/hr:	\$ 960.00
Concrete Coring Equip. Rental:	\$ 500.00
Development of CSP list	
60 mh x \$60/hr:	\$ 3,600.00
Development of Health & Safety Plan:	\$ 3,000.00
Dismantling and Disposal of Underground Tanks and Ancillary Equipment	
60 mh x \$40/hr:	\$ 2,400.00
Disposal:	\$ 80,000.00
Decontamination of Concrete Containments	
40 mh x \$40/hr:	\$ 1,600.00
Equipment Rental:	\$ 3,000.00
Collection & Analysis of Confirmational Samples	
9 wipe samples x \$1,200/ea:	\$ 10,800.00
32 mh x \$60/hr:	\$ 1,920.00
Removal and Disposal of Contaminated Concrete Allowance (10 tons):	\$ 10,000.00
Data Evaluation & Closure Certification	
80 mh x \$60/hr:	\$ 4,800.00
Subtotal:	\$ 194,940.00
Insurance (7%):	\$ 13,660.00
Contingency (15%):	\$ 29,400.00
Total: (CWTP-3)	\$ 238,000.00

mh: manhours

(1): Assumes maximum waste inventory present at closure.

TABLE 9
MAXIMUM CLOSURE COST ESTIMATE
STORAGE BUILDING CWTP-4

<u>ACTIVITY DESCRIPTION</u>	<u>COST</u>
Initial Sampling (Appendix IX)	
2 samples x \$4,500/ea:	\$ 9,000.00
16 mh x \$60/hr:	\$ 960.00
Removal & Disposal of Waste Inventory (1)	
12,500 gal x \$8/gal:	\$ 100,000.00
Background Sampling & Analysis	
2 samples x \$1,200/ea:	\$ 2,400.00
16 mh x \$60/hr:	\$ 960.00
Concrete Coring Equip. Rental:	\$ 500.00
Development of CSP list	
60 mh x \$60/hr:	\$ 3,600.00
Development of Health & Safety Plan:	\$ 3,000.00
Dismantling and Disposal of Underground Tanks and Ancillary Equipment	\$ N/A
Decontamination of Concrete Containments	
40 mh x \$40/hr:	\$ 1,600.00
Equipment Rental:	\$ 3,000.00
Collection & Analysis of Confirmational Samples	
6 samples x \$1,200/ea:	\$ 7,200.00
24 mh x \$60/hr:	\$ 1,440.00
Removal and Disposal of Contaminated Concrete Allowance (10 tons):	\$ 10,000.00
Data Evaluation & Closure Certification	
80 mh x \$60/hr:	\$ 4,800.00
Subtotal:	\$ 148,460.00
Insurance (7%):	\$ 10,400.00
Contingency (10%):	\$ 14,840.00
Total: (CWTP-4)	\$ 173,700.00

mh: manhours

(1): Assumes maximum waste inventory present at closure.

TABLE 10a
MAXIMUM CLOSURE COST ESTIMATE

STORAGE BUILDING CWTP-5

<u>ACTIVITY DESCRIPTION</u>	<u>COST</u>
Initial Sampling (Appendix IX)	
2 samples x \$4,500/ea:	\$ 9,000.00
16 mh x \$60/hr:	\$ 960.00
Removal & Disposal of Waste Inventory (1)	
19,000 gal x \$8/gal:	\$152,000.00
Background Sampling & Analysis	
2 samples x \$1,200/ea:	\$ 2,400.00
16 mh x \$60/hr:	\$ 960.00
Concrete Coring Equip. Rental:	\$ 500.00
Development of CSP list	
16 mh x \$60/hr:	\$ 960.00
Development of Health & Safety Plan:	\$ 3,000.00
Decontamination of Concrete Containments	
800 mh x \$40/hr:	\$ 32,000.00
Equipment Rental:	\$ 3,000.00
Collection & Analysis of Confirmational Samples	
9 samples x \$1,200/ea:	\$ 10,800.00
32 mh x \$60/hr:	\$ 1,920.00
Removal and Disposal of Contaminated Concrete	
Allowance (10 tons):	\$ 5,000.00
Data Evaluation & Closure Certification	
80 mh x \$60/hr:	\$ 4,800.00
Subtotal:	\$227,300.00
Insurance (7%):	\$ 16,000.00
Contingency (10%):	\$ 22,700.00
Total (CWTP-5):	<u>\$266,000.00</u>

mh: manhours

(1): Assumes maximum inventory present at closure.

TABLE 10b
MAXIMUM CLOSURE COST ESTIMATE

STORAGE BUILDING CWTP-6

<u>ACTIVITY DESCRIPTION</u>	<u>COST</u>
Initial Sampling (Appendix IX)	
2 samples x \$4,500/ea:	\$ 9,000.00
16 mh x \$60/hr:	\$ 960.00
Removal & Disposal of Waste Inventory (1)	
15,500 gal x \$8/gal:	\$124,000.00
Background Sampling & Analysis	
2 samples x \$1,200/ea:	\$ 2,400.00
16 mh x \$60/hr:	\$ 960.00
Concrete Coring Equip. Rental:	\$ 500.00
Development of CSP list	
16 mh x \$60/hr:	\$ 960.00
Development of Health & Safety Plan:	\$ 3,000.00
Decontamination of Concrete Containments	
800 mh x \$40/hr:	\$ 32,000.00
Equipment Rental:	\$ 3,000.00
Collection & Analysis of Confirmational Samples	
9 samples x \$1,200/ea:	\$ 10,800.00
32 mh x \$60/hr:	\$ 1,920.00
Removal and Disposal of Contaminated Concrete	
Allowance (10 tons):	\$ 5,000.00
Data Evaluation & Closure Certification	
80 mh x \$60/hr:	\$ 4,800.00
Subtotal:	\$204,300.00
Insurance (7%):	\$ 14,300.00
Contingency (10%):	\$ 20,400.00
Total (CWTP-6):	<u>\$239,000.00</u>

mh: manhours

(1): Assumes maximum inventory present at closure.

F. CONTINGENT CLOSURE AND POST-CLOSURE PLAN FOR CWTP-2 TANK STORAGE AREA

a. General

This section provides a contingent closure and post-closure plan of the CWTP-2 Tank Storage Area. Although the tanks are provided with secondary containment, sections of the process piping and tank appurtenances associated with the tank system extend outside the tank storage area and do not have secondary containment (refer to Figure 1). Only a small section of the buried process piping associated with the tanks and leading toward the CWTP-1 building is within a concrete trench. Similarly, piping associated with the tank system extends underneath the floor of the CWTP-2 Container Storage Area and is not equipped with secondary containment. The buried process piping section leading from CWTP-2 to the Wax Building is being addressed in the Closure Plan for the Burn-Zol Incinerator.

These areas will be evaluated as described in the Closure Plan provided in Section C.e. If the analytical parameters from soil samples collected underneath the concrete floor of the CWTP-2 Container Storage Area or from the piping trenches leading to the Wax Building exceed the health/risk based standards and are above background levels and therefore, clean closure can not be achieved, then the contingent landfill closure and post-closure plan will be implemented as described in this section.

The main part of the CWTP-2 Tank Storage Area consists of the portion of the CWTP-2 facility that houses, and provides secondary containment, to the tanks. The tanks are placed on a concrete floor which is part of the CWTP-2 facility. Therefore, the area can

essentially be considered covered by the building's concrete floor. No infiltration due to precipitation is expected to reach contaminated soils, if any, since the building is roofed. Any contaminated soil present would be effectively covered. However, the buried process piping leading to CWTP-1, which would already be excavated and sampled according to the Closure Plan, is not covered and is being addressed by the present Contingent Landfill Closure Plan.

As described in the following section, the excavated buried process piping trench will be backfilled with compacted clean fill and a low permeability cap including a 60-mil synthetic membrane liner will be installed to comply with the requirements of 40 CFR 265.197 and 265.310. The multilayer cap will consist of a low permeability bottom layer, a middle drainage layer, and a protective top layer. The cap would:

- 1) Provide long-term minimization of migration of liquids through the closed impoundments;
- 2) Function with minimum maintenance;
- 3) Promote drainage and minimize erosion or abrasion of the cover;
- 4) Accommodate settling and subsidence so that the cover's integrity is maintained; and
- 5) Have a permeability less than or equal to the permeability of natural subsoils present.

b. Contingent Closure of CWTP-2 Tank Storage Area

This section describes step by step the procedures to be followed during the contingent landfill closure of the excavated buried process piping trenches.

Table 11 provides a list of the existing buried process piping along with the size, material of construction, status, and wastes carried in each one. The location of the existing buried process piping is also shown in Figure 2 and is identified by the numbers listed in the first column of Table 11.

The same Health and Safety Plan, specific to the site being closed and the CSP list, that will have already been prepared according to the Closure Plan, will also cover the Contingent Landfill closure activities to be performed.

The buried process piping area, outlined in Figure 2, will be further excavated to a depth of 4 - 5 ft. P&W may elect not to excavate areas which would endanger the stability of a building or would disturb existing utilities.

The impermeable cover will be constructed as described below. The excavated trench will be backfilled with clean fill compacted every 6" to 95% optimum density. A 6" subgrade bedding will be prepared so that it is free of any vegetation, protrusions and rocks larger than 3/4" in diameter. The subgrade bedding will be mechanically compacted to 95% optimum density. The low permeability layer will consist of a flexible membrane liner which will be at least 60 mil thick of high density polyethylene or equivalent material.

The drainage layer will be at least 12" thick with a saturated hydraulic conductivity of not less than 1×10^{-2} cm/sec under normal compactive conditions. The composition of the layer will be medium to coarse sand, not coarser than 3/8", smooth and rounded and should contain no debris, that would damage the underlying flexible membrane

TABLE 11

LIST OF EXISTING BURIED PIPING
(Portions of some lines are in concrete trenches)

Number	Size (inches)	Material	Fluid	Status	Location	
				(Act = Active) (NIU = Not in use)	From	To
1	1 1/2	Steel	Blended Waste	NIU	Basement CWTP-2	Wax Bldg.
2	1	Steel	Soluble Oil	NIU	Basement CWTP-2	Wax Bldg.
3	1	Steel	Soluble Oil	NIU	Basement CWTP-2	Wax Bldg.
4	2	PVC	Blended	NIU	Basement CWTP-1	Wax Bldg.
5	2	PVC	Acid	NIU	Truck Pad 2	Basement CWTP-2
6	2	Steel	Zyglo, Alkali	NIU	Truck Pads 1 and 2	Basement CWTP-2
7	2	Steel	Cyanide	NIU	Truck Pad 1	Basement CWTP-2
8	2	Steel	Blend	NIU	Truck Pad 1	Basement CWTP-2
9	6	PVC	Containment Overflow	ACT	Truck Pad Containments	Buried Hold- ing Tank
10	6		Containment Drains (Truck Pads 1 and 2)	ACT	Truck Pad Valve Pit	DWW Sump in CWTP-1

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TABLE 11 (Continued)
LIST OF EXISTING BURIED PIPING (Continued)
(Portions of some lines are in concrete trenches)

Number	Size (inches)	Material	Fluid	<u>Status</u>		<u>Location</u>	
				(Act = Active) (NIU = Not in use)		From	To
11	6		Containment Drain (Truck Pad 3)	ACT		Truck Pad 3	Sump in CWIP-1
12	3	Steel	Alkali	ACT		Storage Tank	Basement CWIP-2
13	3	Steel	Cyanide	NIU		Storage Tank	Basement CWIP-2
14	3	PVC	Cyanide	NIU		Storage Tank	Basement CWIP-2
15	3	PVC	Cyanide	NIU		Storage Tank	Basement CWIP-2
16	2	FRP	Acids	ACT		Acid Containment	Treatment Tanks
17	2	FRP	Chromic Acid	ACT		Chromic Acid Containment	Treatment Tanks
18	2	PVC	Alkali	NIU		Basement CWIP-2	Treatment Tanks
19			Dilute Chrome	NIU		Truck Pad 3	Basement CWIP-1
20	2	PVC	Chromic Acid	NIU		Basement CWIP-2	Treatment Tanks
21	4	FRP	Cyanide and Alkali	ACT		Alkali/ cyanide unloading station	Alkali/ cyanide tank containment

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 CONTAINER/TANK STOR. AREAS
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liner, or fines that would reduce the permeability of the layer.

The protective soil layer will consist of a total thickness of 24", of which the lower 15" will consist of compacted clean fill, overlain by 6" of compacted gravel, overlain by two 1 1/2" thick courses of bituminous pavement. Joint sealer will be placed over the joints of the existing and new bituminous pavement to minimize stormwater infiltration. Additional sampling may be required to determine the extent of the contaminated area to be covered or otherwise remediated.

The extent of the impermeable cover and a typical cross-section, based on the assumption that the contamination is limited to the immediate vicinity of the piping trench, are presented in Figure 2. The synthetic membrane liner, drainage layer, and upper protective soil layer (including the bituminous pavement) will be surveyed upon completion. Once the impermeable cover has been installed and the contingent closure plan has been implemented, P&W will obtain a certification of closure from a licenced Professional Engineer. A survey plat will be submitted to the local land authority (Town of East Hartford), to the Commissioner of the CTDEP and to the Regional Administrator of the EPA. In addition, a notice that the land has been used to manage hazardous waste and the restrictions on the land's use in the future will be recorded on the facility's property deed. A copy of the property deed with the notation will be submitted to the CTDEP and EPA along with the closure certification.

The impermeable cover described above will provide long-term

minimization of migration of liquids through the closed process piping trenches, since they will be covered by the synthetic membrane. The thickness of the synthetic membrane (60 mil) is such that will prevent rupture from the underlying or overlying material. In addition, the relatively impermeable 3" thick bituminous pavement on top will minimize stormwater infiltration. Furthermore, with the exception of areas in which excavation would endanger a structure's stability, all easily accessible contaminated soils will be removed to a depth of approximately 4 to 5 ft. The groundwater table in the vicinity of the CWTP is relatively shallow and therefore the role of the synthetic membranes in minimizing liquid migration through infiltration is limited only to the amount of native soil lying above the groundwater table.

The impermeable cover will require minimum maintenance since the bituminous pavement will consist of two 1 1/2" thick coarses on a 6" compacted gravel subgrade. The pavement will also provide stormwater drainage with minimum erosion. The concave shape of the synthetic membrane liner will provide drainage of any stormwater infiltration to the native soils on both sides of the membrane. The native soils consist of predominantly sand and gravel which have a higher permeability than the protective soil layer. Settling and subsidence to the cover's integrity will be prevented due to the compaction during the cover's installation as specified above. Further, the cover will be adequately protected from the frost by the 24" protective soil layer, including the 3" bituminous pavement, and the 12" drainage layer.

As part of the Contingent Closure Plan a hydrogeologic study will also be performed in the vicinity of the CWTP-2 building to determine the degree and extent of contamination. The results of the study will be used to develop the groundwater monitoring program for the post closure plan, as discussed in the following paragraph.

A cost estimate for the contingent landfill closure plan is presented in Table 12 based on 1991 dollars. An allowance of \$50,000 is included for the hydrogeologic study.

TABLE 12

CONTINGENT CLOSURE PLAN

COST ESTIMATE

CONTINGENT CLOSURE OF CWTP-2 TANK STORAGE AREA

<u>ITEM</u>	<u>COST</u>
1) Trench excavation and removal of buried process piping:	\$ 2,000
2) Disposal of removed process piping:	\$ 4,000
3) Disposal of contaminated soils:	\$ 40,000
4) Cover installation including 6" prepared subgrade, 60 mil synthetic membrane, 6" drainage layer, 15" protective soil layer, 6" gravel layer, and 3" bituminous upper layer:	\$ 40,000
5) Preparation of survey plat and certification of closure by a licensed Professional Engineer:	\$ 6,000
6) Hydrogeologic study to determine degree and extent of contamination:	\$ 50,000 (allowance)
TOTAL:	\$ 142,000

c. Post-Closure Plan of CWTP-2 Tank Storage Area

The post-closure plan for the CWTP-2 Tank Storage Area identifies the activities to be performed during the post-closure period, i.e. for at least 30 years after completion of closure. During post-closure the area will remain securely covered with a cap which will prevent incidental short-term contact by the public or wildlife which could pose a potential health hazard.

As described in the contingent closure plan of the CWTP-2 Tank Storage Area, a hydrogeologic study will be performed to determine the degree and extent of contamination in the vicinity of the CWTP-2 building. The results of the study will be used to design and implement a groundwater monitoring program.

The groundwater monitoring wells installed according to the groundwater monitoring program developed above will be sampled and analyzed quarterly for the CSP list parameters developed in the closure plan. The analytical data will be evaluated and compared with risk-based standards and background (upgradient well). A report will be prepared quarterly summarizing the analytical data and presenting the result evaluation.

During the post-closure period, P&W will inspect the impermeable cap on a weekly basis. The monitoring wells will be similarly inspected on a weekly basis to ensure that the upper concrete seals, protective casings and caps are in proper operating condition. Specific details of post-closure inspections and monitoring would be developed during the implementation of the contingent closure after

details of the groundwater monitoring program have been developed.

Within 60 days after the completion of the established post-closure care period, P&W will submit to the Commissioner of the CTDEP and to the Regional Administrator of the EPA, Region I, by registered mail, a certification that the post-closure care period was performed in accordance with the specifications in the approved Post-Closure Plan. The certification will be signed by P&W and by an independent registered Professional Engineer.

Table 13, on the following page, presents the cost estimate for the post closure of the buried process piping, while Table 14 presents a summary of all closure and post-closure costs required for closure of the container and tank storage areas CWTP-1 through CWTP-6. All estimated costs are in December 1991 dollars.

TABLE 13
POST CLOSURE PLAN
COST ESTIMATE

POST CLOSURE PLAN OF CWTP-2 TANK STORAGE AREA

<u>ITEM</u>	<u>COST</u>
1) Annual monitoring costs:*	\$ 24,000
(Quarterly well sampling and analysis)	
2) Annual data evaluation and report preparation:	\$ 12,000
3) Annual inspection:	\$ 4,000
4) Annual maintenance:	\$ 5,000
 TOTAL ANNUAL COST:	 \$ 45,000
	=====
 30 YEAR TOTAL COST:	 \$ 1,350,000
	=====

* Assumes 4 groundwater monitoring wells

TABLE 14

SUMMARY OF CLOSURE COST ESTIMATES

CWIP-1 THROUGH CWIP-6 CONTAINER AND TANK STORAGE AREAS

CLOSURE PLAN

CWIP-1	\$ 171,500
CWIP-2, CONTAINERS	\$ 180,700
CWIP-2, TANKS	\$ 333,400
CWIP-3	\$ 238,000
CWIP-4	\$ 173,700
CWIP-5	\$ 266,000
CWIP-6	\$ 239,000

CONTINGENT CLOSURE PLAN

(CWIP-2)	\$ 142,000
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POST CLOSURE PLAN (30 Year Cost)

(CWIP-2)	\$ 1,350,000
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TOTAL:	\$ 3,094,300
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b. Closure Cost Estimate Revisions

Since the closure costs given in Tables 5 through 14 are based on December 1991 dollars, these costs must be updated annually, using the Annual Implicit Price Deflator for Gross National Product as published by the U.S. Department of Commerce in its "Survey of Current Business". The ratio of the Implicit Price Deflator for the current year to that of the previous year produces a factor which is multiplied by the closure cost estimate for an updated figure. Table 15 on the following page, would list the updated figure and will be updated, as required to reflect the latest data available.

TABLE 15
CLOSURE COST ESTIMATE REVISIONS

<u>DATE</u>	<u>IMPLICIT PRICE DEFLATOR RATIO</u>	<u>CLOSURE FACTOR</u>	<u>COST</u>
Dec. 1991			\$3,094,300

NOTES:

1. Gross National Product (GNP) Implicit Price Deflator Ratios are based on latest data available at time of revision.
2. An Implicit Price Deflator of 100 for 1987 was used as a base.